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Integrated Crop Management NEWS

Time to Assess Corn Rootworm Activity in Iowa

By Erin Hodgson and Aaron Gassmann, Department of Entomology

Corn rootworm egg hatch was delayed this year because of cool spring temperatures, and adults are beginning to emerge throughout Iowa. Now is a good time to assess root injury caused by larvae and also monitor for adult activity in corn.

Larvae

Evaluate root injury to better understand the efficacy of your management program. Monitoring over several years will help establish a historical record of how larvae respond to management tactics (e.g., crop rotation, Bt corn, soil insecticides, etc.). One common outcome of severe larval feeding is lodging of corn plants. However, it is important to confirm that feeding from corn rootworm was the cause of lodging and that it did not results from other factors such as strong winds.

The most common scale for rating root injury is the 0-3 scale developed at Iowa State University:

- 0 = no injury
- 1 = one complete node (approximately 10 roots) is pruned to within 1.5 inches of the stalk
- 2 = two complete nodes (approximately 20 roots) are pruned to within 1.5 inches of the stalk
- 3 = three complete nodes (approximately 30 roots) are pruned to within 1.5 inches of the stalk

The Iowa State University root injury scale is linear and directly related to plant lodging and yield loss. Root injury that exceeds 0.25 is likely causing economic loss. For Bt hybrids, any injury ratings that exceed 1.0 would be considered unexpected. Resistance to Cry3Bb1 has been confirmed in Iowa since 2011 and is suspected for mCry3a. Consider diversifying corn rootworm management to delay resistance and improve larval management. Examples to consider include crop rotation, rotation of Bt traits, and rotations to soil-applied insecticide without a Bt trait.

Adults

Corn rootworm will feed on leaves and cause some scarring; however, this does not cause economic loss. Adults can cause yield loss if emergence occurs when corn is silking, and therefore, this is a critical time period to scout fields. Adults are strongly attracted to silks and will mass on plants to feed and mate (Photo 1). Adults that trim silks during pollen shed will interfere with optimal pollination.

Photo 1. Western corn rootworms are strongly attracted to corn silks and can interfere with pollination. Photo by John Obermeyer, Purdue University Extension.

Weather plays an important role in determining how plants respond to silk feeding. Plants do not tolerate as much feeding during pollination in hot and dry weather. For example, under ideal moisture conditions, plants could tolerate 15 beetles per plant, but that number is reduced to just five per plant under drought stress (Photo 2).

Photo 2. Rolling corn leaves is an indication of moisture stress. If plants are droughty during silking, fewer beetles are needed to cause economic loss. Photo by Virgil Schmitt, ISU Extension and Outreach.

Late-planted fields or late-flowering hybrids are generally attractive to adult corn rootworm. Silks will still be developing in these fields when older fields have brown or drying silks. Adults may migrate and aggregate in this later-maturing fields.

It is always a smart idea to scout for insects in corn fields during pollination. But with adult corn rootworm becoming active during silking this year, we highly recommend keeping an eye on fields in order to protect yield. A foliar insecticide may be warranted if there are five or more beetles per plant, silks have been clipped to less than one-half inch of the ear tip, and pollination is not complete. Also take into consideration other insects that may be feeding on the silks at the same time (e.g., Japanese beetle).

If you find injury to Bt corn of more than one node, this may be due to western corn rootworm that have developed Bt resistance, and resistance should be suspected in these cases. The Department of Entomology at Iowa State University is working to understand the extent of resistance within the state and to develop management recommendations for Bt-resistant populations of western corn rootworm. Please contact Aaron Gassmann or Erin Hodgson to report fields with suspected resistance.

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